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NON-LETHAL WEAPONS: A PLACE IN THE TOOL BAG

by

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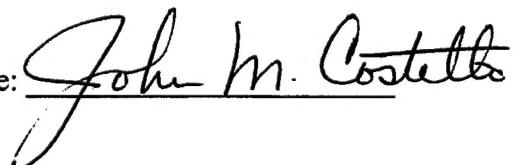
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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by The Naval War College or the Department of the Navy.

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Abstract of

NON-LETHAL WEAPONS: A PLACE IN THE TOOL BAG

In today's changing world, the military is facing challenges and missions that require different solutions and approaches. The one size fits all philosophy, does not necessarily work in a world where it is sometimes hard to distinguish the non-belligerents from the belligerent. As U.S. Marine Corps, Deputy Chief of Staff, Lieutenant General Steele noted, "the young warriors we are training to defend both our national and global security interests are faced with emerging environments, asymmetric environments, and new, sometimes daunting situations filled with new challenges that we have never experienced before."¹ In this era of uncertain and confusing conflict, non-lethal weapons technology offers the military and political leaders an option between doing nothing and using deadly force.

Non-lethal weapons should not be viewed as the solution or panacea to all problems and crises in the twenty first century. These weapons and the associated technology offer an option to the commander and are part of the revolution in technology and military affairs. Their utility is the subject of much debate because of the concerns non-lethal weapons raise with rules of engagement, risk, legal and ethical issues.

These concerns notwithstanding, non-lethal weapons have value in today's and tomorrow's military operations. They are tools that can provide a synergistic effect when used by the operational commander in conjunction with traditional forces and weapons. They are not a stand-alone technology that will supplant the lethal technologies of today, but an augmenting and enabling force.

¹ Lieutenant General Martin R. Steele, Deputy Chief of Staff, Speech, Non-Lethal Defense III Conference, Baltimore, MD., 25 February 1998, 5, <<http://www:usmc.mil/nlw/>> (18 April 1999).

Introduction

In today's chaotic and often explosive world, new options and capabilities are needed to assist the political and military leaders in responding to conflicts and operations across the full range of military operations (RMO). As Sun Tzu wrote, "to fight and conquer in all your battles is not supreme excellence, supreme excellence consists in breaking the enemy's resistance without fighting."² This is a very lofty ideal, but one that may be partially attainable with non-lethal weapons (NLWs). As the world changes, the tools the military uses to respond and accomplish objectives must change to succeed. NLWs are part of those new tools. They are part of the synchronization process that enhances our capabilities when used in conjunction with the diplomatic, economic, and traditional military means.

The Department of Defense Directive defines NLWs as "weapons that are explicitly designed and primarily employed so as to incapacitate personnel or material, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and environment."³ The directive further states these weapons employ means other than destruction to prevent the target from functioning and minimize fatalities but do not preclude all fatalities. The latter is a point, both sides in the debate use to their advantage when discussing the pros and cons of this technology. The pro side cites the minimizing of fatalities as an indication of the humanity of using this technology and how the U.S. would be on the moral high ground. What better way to resolve a conflict, than not have massive death and collateral damage or better still, not

² Sun Tzu, The Art of War, ed. James Clavell (New York: Delacorte Press, 1981), chap.3, axiom 3.

have a conflict? While the critics of this technology, point to the need for force to handle any conflict. They emphasize; the use of lethal force is the only means belligerents understand. Anything less than the use of lethal force would indicate our lack of effort or indecision.⁴ Both are interesting points of view, but do not look at the full picture.

Changing battlefield. Continuing with this discussion, there are many reasons why NLWs are attractive in this day of precision munitions, CNN on the battlefield, and dislike for collateral damage. As General Sheehan said during a speech at the Non-lethal Defense Conference in 1996:

“In the CNN era, an individual’s decision to use or not use deadly force is no longer merely a tactical decision. The implications of the decision will be immediately broadcast to every capital in the world. It therefore has a strategic dimension.”⁵

This statement and the numerous operations U.S. forces are being used in illustrates that the battlefield is changing in ways we are just now starting to comprehend. Many of these changes are occurring at the low end of the continuum, what some would call operations other than war (OOTW), but they have an impact at the operational and even strategic levels. The conflict spectrum or continuum has grown from the days when it was defined as low intensity conflict to high intensity conflict. Today that continuum is much more involved and convoluted as indicated in figure 1.⁶

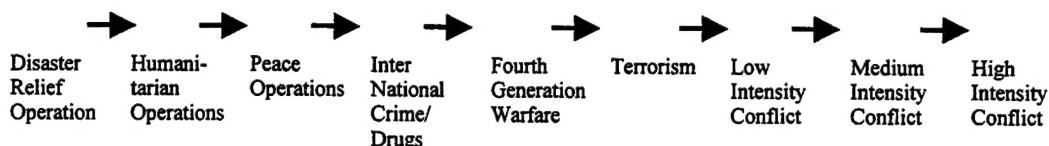
³ Department of Defense (ASD SO/LIC), Policy for Non-lethal Weapons, DODD 3000.3 (Washington: 1996), 1.

⁴ Lieutenant Colonel Margaret –Anne Coppernoll, “The Nonlethal Weapons Debate,” Naval War College Review, Spring 1999, 113.

⁵ General John J. Sheehan, quoted in “Nonlethal Weapons – Let’s Make it Happen” Remarks, Non-lethal Defense Conference II, Washington D.C., 7 March 1996.

⁶ Lieutenant General Zinni and Colonel Ohls, “No Premium on Killing,” U.S. Naval Institute Proceedings, December 1996, 26.

Figure 1: Conflict Intensity Continuum



Added capabilities. The result of this broader spectrum is the requirement for better tools, and more capability to respond appropriately to the changing situations. Being able to respond along the continuum with the appropriate force is critical. A point of clarification is there are missions that are normally associated with OOTW, but that can occur throughout the spectrum. For example, insurgency and law enforcement actions can occur in any of the environments depicted on the continuum.⁷ Therefore, it is not as easy to say NLWs have applicability only at the low end of the spectrum. Because these missions can occur across the spectrum, NLWs have applicability throughout the spectrum. Additionally, the use of these weapons and the associated technology, on initial review, comply with the law of armed conflict tenants of proportionality, humanity, and military necessity. Before the advent of NLWs, there was difficulty responding along the spectrum, because there was no option other than a lethal response. As General Zinni wrote, “our adversaries found an operational niche in which they could be neither deterred nor controlled--and against which we were unwilling to apply lethal force.”⁸ NLWs technology fills this gap when properly used and managed.

⁷ Coppernoll, 115.

⁸ Ibid.,27.

The keys to this added capability are proper management and rational employment. Without these, it would be very easy to be drawn into numerous situations that would otherwise not be in our national interests. NLWs could make it too easy to get involved. The critics of NLWs cite this as the slippery slope.⁹ As with other technologies, there are restrictions to what NLWs can and can not do and those limitations must be understood and factored into the potential situations. Just as in the conflict continuum (figure 1), there is a force continuum that NLWs technology has applications across the spectrum. As stated earlier, this technology is not a panacea for every situation, but a supplement. It is an enhancement of capabilities that will work with other technologies and weapons.

Achieve the objective. "By pursuing the ability to produce a broader range of potential weapons effects, it directly supports the operational concept of *full dimensional protection*."¹⁰ This concept is part of Joint Vision 2010 and is based on the premise of giving the commander the tools to be proactive and decisive. NLWs allow the commander to achieve objectives with precision, thus minimizing collateral damage. They may also be used initially to preclude more violent operations later.

As stated in both the National Security Strategy and the National Military Strategy, we must be able to respond to the full spectrum of crises. "The variety of challenges that we will face may also require less than lethal technology to meet demands ..."¹¹ An example of this use of NLWs, at the lower end of RMOs, was Operation

⁹ Coppernoll, 124.

¹⁰ Department of Defense, "A Joint Concept for Non-Lethal Weapons." *Marine Corps Gazette*.

¹¹ Joint Chiefs of Staff, National Military Strategy of the United States (Washington, D.C. : September 1997), 26.

United Shield (the evacuation of U.N. personnel from Somalia), where the U.S. Marines had the ability to use NLWs during the entire operation. Although there were concerns and questions regarding their use, the Marines used sticky foam and some other basic NLWs in conjunction with lethal weapons to accomplish the mission. They used the technology because the commander (General Zinni) wanted it, and because they had a plan, that fully integrated NLWs into their mission. "At the tactical level they were used to deny access and protect troops; at the operational level they were used to accomplish critical objectives; and at the strategic level they focused the attention of the world on the restraint demonstrated by UN peacekeeping forces."¹²

Discussion

NLWs at the low end of the spectrum have been used for many years with different levels of success. These systems, in the right situation, have worked very well because of their simplicity, and precision. They offered an alternative to lethal force and when necessary supplemented lethal force. Their disadvantage has been their lack of standoff distance and their utility to specific situations.

Types of NLWs. The following figure was included in a report conducted for the Office of the Assistant Secretary of Defense in August 1996 on Non-Lethal Weapons.¹³

This figure divides the NLWs into five broad categories:

- Mechanical	- Chemical
- Acoustical	- Biological
- Electromagnetic	

¹² Charles Heal, "Making Not Breaking the Rules," Jane's International Defense Review, September 1997, 77.

¹³ Timothy J. Hannigan, Lori Raff, and Rod Paschall, "Mission Applications of Non-Lethal Weapons," Report for Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (Policy Planning), August 1996, Appendix C.

Although this list may not be all-inclusive, it does point to a broad range of devices currently available or in the concept stage. These broad categories include devices and technologies that are either antimaterial, antipersonnel, or both. They include the capability to jam or destroy communications (Electromagnetic/Microwave and EMP Devices); choke internal combustion engines (Chemical/ Combustion Modifiers); impede vehicle or personnel traffic with antitraction technology (Mechanical/ Fluids and Fillers); inhibit movement with foams and nets (Mechanical/ Binding Devices); and incapacitate personnel with highly obnoxious sounds and smells (Acoustic/Chemical). This short summary of figure 2 emphasizes the wide range of tools available for today's operational needs.

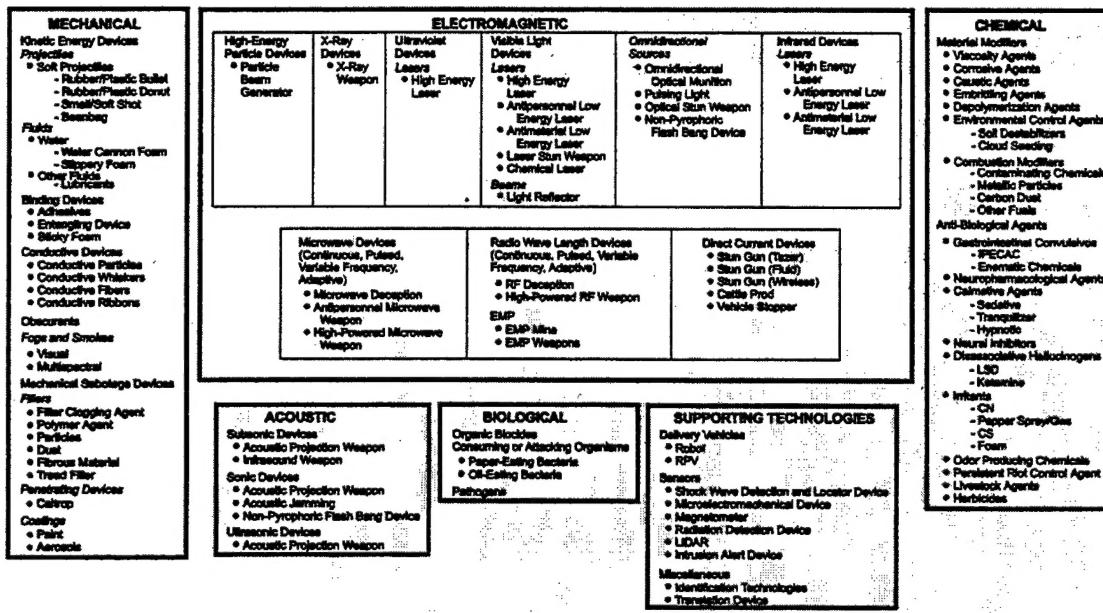


Figure 2
Non-Lethal Weapon Taxonomy

Concerns

As with any new technology, there are concerns with the use of NLWs. The first issue is rules of engagement (ROE). ROE as defined in Joint Publication 1-02 are, "Directives issued by competent military authority which delineate circumstances and limitations under which United States will initiate and/or continue combat engagement with other forces encountered."¹⁴ ROE, with the addition of NLWs have become a very contentious issue, not that ROE is an easy subject without this new technology.

Previously, ROE development was based on either the use of force or no force. With the advent of NLWs, as discussed earlier, there is a force continuum along which lethal and non-lethal force can be applied to match the appropriate response. Herein lies some of the concern with NLWs, they will create too many decision matrices for the soldier in the field. The decision to use lethal or non-lethal force may create indecision and cause confusion. This may occur, but the opposite is more likely. With NLWs, the soldier in the field will have the appropriate response for the more likely encountered scenarios. In a recent study by Professors Lovelace and Metz, for the Strategic Studies Institute, this issue of ROE was clearly stated, "Not providing ROE that match a service member's capability to respond with the level of force called for by the situation creates an insoluble situation that at best promotes mission failure and at worst results in excessive force and unnecessary injury or death."¹⁵

¹⁴ Joint Chiefs of Staff, DOD Dictionary of Military and Associated Terms (Joint Pub 1-02) (Washington, D.C.: June 10, 1998), 388.

¹⁵ Douglas C. Lovelace and Stephen Metz, Nonlethality and American Land Power: Strategic Context and Operational Concepts, U.S. Army War College, Carlisle, PA., June 15, 1998, 30.

ROE with the use of NLWs should actually be more specific and answer the questions that are encountered today. The formulation of ROE should be able to consider the availability and capabilities of both lethal and non-lethal weapons. Vice confusing the issue, NLWs should add clarity and resolution to the ROE debate by making the rules fit our capabilities and not the opposite.

Risk. The issue concerning risk and NLWs is that U.S. personnel will give up lethal capability at the expense of non-lethal capability. In some respects, this could occur at the tactical level, but choice is always the commander's responsibility. The commander must determine the environment his personnel will be operating in and the threat they will encounter. During that evaluation, the commander determines what resources and capabilities are required to achieve the objective. As stated in DOD Directive 3000.3, the presence of NLWs shall not limit the commanders' authority nor dictate their use and also the use of lethal force is always authorized in the process of self defense.¹⁶

This same evaluation process needs to be conducted at every level to determine if the gain obtained with NLWs outweighs the loss of some lethal capability. The idea of NLWs is that they add new capabilities and response to the changing RMO. The essential point in the discussion of risk is NLWs, at least as currently employed, will never be used independent of lethal force. An example of this thought process was the procedures the Marines used during Operation United Shield. The Marines countered some of the risk by implementing a list of do's and don'ts:¹⁷

- No Marine should be put at risk to employ non-lethal means

¹⁶ DODD 3000.3, 2.

¹⁷ Nick Lower and Stephen Schofield, Non-Lethal Weapons: A Fatal Attraction? (Atlantic Highlands, NJ: Zed Books Ltd., 1997), 71.

- Less lethal means should not be used in lethal situations
- Units using less lethal means should always be covered with lethal weapons
- NLWs should not be used just to use them

As indicated in this list, the capability to resort to lethal force was always available. The political desire and the changing world environment were not allowed to drive either the operational requirements or the ROE. In summary, risk is part of every operation whether lethal or non-lethal force is involved. The management of risk is through clear and concise ROE that are flexible enough to accommodate the force continuum from lethal to non-lethal force.

Legal and Ethical. Despite the pleasing verbiage and visions NLWs conjure in people's minds, they bring new concerns to the battlefield. They bring the risk of maiming through laser blinding, directed-energy disruption of internal organs, inadvertent adverse reaction to chemical and biological agents intended for automobiles and equipment, possible death and injury from kinetic impact of rubber, plastic and wooden bullets, and possible others.¹⁸ These issues plus others combine to make the legal and ethical concerns very legitimate.

The full extent of the legal and ethical concerns is beyond the scope of this paper. This section will only scratch the surface by broadly discussing the general issues and leave the specific issues to the legal experts. On the ethical side, the use of NLWs conform to the laws of armed conflict when used properly and with appropriate ROE. Specifically, NLWs add precision and discrimination to handling operations along the spectrum. They add precision and discrimination by being able to target equipment and

¹⁸ Lieutenant Commander Michael W. Douglas, "Rules of Engagement for Non-Lethal Weapons," (Unpublished Research Paper, U.S. Naval War College, Newport, RI: 1998), 9.

personnel without the high probability of death and destruction. The key to their use, will be to not abuse or exaggerate the capabilities of different non-lethal technologies. They are proportional and humane when used properly. The basic premise concerning either of these issues is the U.S. will adhere to all treaty provisions regardless of strict legal obligations. Consistent with this philosophy is the requirement in the Department of Defense Instruction 5500.15, that any new weapon system be reviewed by the Judge Advocate General (JAG) of the appropriate military department to ensure intended use is consistent with all treaties, international law, and with laws of war.¹⁹ As can be seen from this quote, the requirement is for any new weapon system and is not specific to NLWs. This review ensures the new weapon system when fielded will not meet with legal and ethical concerns. The Navy Jag has completed several of these reviews of NLWs and the "International and Operational Law Division of the Deputy Assistant Judge Advocate of the Navy has recently approved a list of proposed new, advanced, or emerging technologies that may lead to developments of interest to the joint nonlethal weapons effort."²⁰

The following is a list of possible legal and treaty restrictions concerning the use of NLWs in Major Regional Conflict (MRC)²¹:

- NLWs such as those identified in figure 2 and identified as Anti-Biological Agents may be defined as toxic chemicals prohibited by the Chemical Weapons Convention (CWC) for any purpose.
- Other antipersonnel chemical-based NLWs, such as sticky foam, odor-producing chemicals, and lubricants are likely to be permitted under the CWC.

¹⁹ U.S. Defense Department, "Review of Legality of Weapons under International Law," Instruction 5500.15, 16 October 1974.

²⁰ Coppernoll, 118.

²¹ Hannigan, Raff, and Paschall, 18.

- Riot Control Agents (RCA) can be used in MRC only against noncombatants, such as in riot control situations or in rear echelon areas outside the zone of immediate combat.
- Biological weapons, both antipersonnel and antimaterial, violate U.S. law.
- Use of antimaterial chemical-based NLWs are probably permitted under the CWC.

As can be seen from these possible restrictions, the way treaties are interpreted may have an impact on what NLW technologies may be used during the RMO. One interesting point, from this list, is RCAs can only be used against noncombatants because the CWC prohibits the use of RCAs as a method of warfare. This is indicative of the legal and ethical concerns NLWs bring to the battlefield. These are not insurmountable concerns, but they will require continuing research to ensure the capability is properly employed and doctrine is clearly articulated.

Employment

The next sections will review some recent operations where NLWs have been employed and some possible scenarios where they could be employed. These sections cannot cover every possibility, but will attempt to show that NLWs have a place in the operational commander's bag. These weapons and the technology are not for every operation, nor are they the wonder weapons of some futuristic movie. They are similar to net-centric warfare and precision guided munitions (PGM) and are part of what some people call the revolution in military affairs (RMA) and associated military technology revolution (MTR).²² NLWs are a continuation of the requirement for technology to provide alternatives, which minimize death and destruction. In this CNN environment,

²² Lewer and Schofield, 17.

the American public's will to get involved is tethered to their desire to have zero U.S. casualties.

Some examples of recent operations where NLWs have been used are Somalia, Haiti, Bosnia, Iraq, and Yugoslavia. The operations in Somalia, Bosnia, and Haiti were all operations at the low end of the force spectrum. U. S. Forces used very basic NLWs including sticky foam, 40mm foam baton rounds, and 40mm stinger rounds.²³ These weapons were used as crowd control tools. They were employed at the tactical level, but enabled the operational commander to accomplish operational objectives with the combination of lethal and non-lethal force. NLWs were the option between threats and the use of lethal force. They provided alternatives in a very nebulous environment. The employment of these weapons was not perfect, and there were some over expectations concerning capability, but in the final analysis, they were new tools for the commander.

In Iraq and Yugoslavia, NLWs were used in a much more operational to strategic sense. They were employed to degrade electrical systems without destroying the actual buildings or equipment. They were used in conjunction with PGMs to attack critical vulnerabilities, i.e. C2 nodes. In Iraq, cruise missiles were used to disperse carbon-fiber ribbons over power stations to short out electrical power.²⁴ This tactic was not highly publicized during the Gulf War, while in Yugoslavia, the use of this type weapon was publicized immediately after its use. The Wall Street Journal on May 4, 1999 had the following article, "Yugoslavia Is Hit With U.S. 'Soft' Bombs" and went further to say

²³ Coppernoll, 129.

²⁴ Nick Lower and Steven Schofield, 19.

new weapon short-circuits electrical transformers, has psychological effect.²⁵ The primary objective of the attack was to disrupt the antiaircraft network without totally destroying the electrical system, but another possible intangible objective was to attack and diminish the will of the people. By attacking the power system without causing death and destruction, NATO was highlighting the fact they were in control of the situation. A fact U.S. officials thought was key to victory during the short air campaign in Bosnia in 1995.²⁶ It also emphasized the enabling and synergistic properties of NLWs when used in conjunction with lethal weapons. The employment of this technology gave the NATO commander the capability to turn the electricity on and off in Yugoslavia.

The growth process in the employment of NLWs has been slow. The initial use has been at the tactical level without much written guidance. In 1997, realizing the need for consolidation of effort and standardization of doctrine, the DOD designated the U.S. Marine Corps as the executive agent for NLWs and in 1998 a joint tactical pub was written for the employment of NLWs.²⁷ The selection of an executive agent and the creation of a tactical publication have started the educational process. The continuation of this process will be the incorporation of NLWs at all levels of warfare and the continued research and doctrine to ensure this technology is used properly.

Future scenarios. Only the imagination and the laws of science limit future possible employment options of NLWs. Some of the scenarios mentioned in this section are just ideas because the technology has not reached the point of employment. A recent study

²⁵ Thomas E. Ricks, "Yugoslavia is Hit with U.S. 'Soft' Bombs," article in The Wall Street Journal, May 4, 1999, A17.

²⁶ Ibid.

²⁷ The Joint Non-Lethal Weapons Program, 27 April 1999, <http://www.usmc.mil/nlw/> (19 April 1999).

concluded that of 103 missions associated with MRC and OOTW, NLWs had some utility in 79 of those missions.²⁸ Possible scenarios, as mentioned earlier, include disabling C2 and electrical systems. By disabling systems vice destroying them, there is a quicker return to normalized operations at the cessation of hostilities. Infrastructure does not have to be rebuilt or repaired and collateral damage is reduced.

Another possible employment option is to disperse personnel with foul smelling chemicals prior to bombing a strategic point to reduce civilian casualties. In both Iraq and Yugoslavia, there were at least hints of using people as shields at strategic sites. By dispersing personnel before lethal weapons are used or by denying use of facilities without destroying them, NLWs create options for the JFC. Their use may preclude countries from using hostages as human shields or parking aircraft by mosques and other highly visible structures. Additionally, using combustion modifiers, fluids and fillers, and binding devices to stop fleeing military personnel and vehicles would be much better than having another highway of death as occurred in Kuwait. A possible better situation than the bombing of Belgrade would be the use of NLWs in conjunction with PGMs. The bombings only seemed to have united and drawn the population much closer to Milosevic, whereas, NLWs if employed properly might separate the population from leaders like him. Employment of NLWs could emphasize the conflict is with the leader and his tactics and not the general population. By not destroying the infrastructure and limiting casualties, NATO would be viewed as having the moral high ground and not trying to punish the population.

²⁸ Hannigan, Roff, and Paschall, 8.

Conclusion

In the CNN environment of today, NLWs are an appropriate response to the philosophy of reducing collateral damage, while still accomplishing the objectives. They provide options and bridge the gap between doing nothing and using lethal force along the force continuum where once there were not options.

This capability to provide options may not be all positive. It may create a slippery slope by making it too easy to get involved in situations previously considered outside our national interests. Also, without a thorough understanding of the true capabilities of NLWs, there could be an exaggeration or overuse and loss of effectiveness. There may be the mistaken impression the use of NLWs creates a bloodless battlefield, where casualties are a thing of the past. These issues will need continuing research and discussion before some of the weapons discussed can be fielded.

NLWs are enabling weapons that provide a synergistic effect when properly used in conjunction with lethal weapons. They will reduce casualties and collateral damage, and give the operational commander another tool to deal with the RMO encountered in the future. This is not to say NLWs are the panacea for every operation, or that they will render lethal weapons useless in the future. The technology is a tool, which will require careful attention and doctrine. The use of these weapons may create some concerns, but it would be ironic, if a technology that was suppose to reduce casualties was not used in lieu of lethal weapons because the concerns could not be resolved.

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